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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/624,540	07/23/2003	Yoshinari Ichihashi	57810-070	7515

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EXAMINER	
TRAN, MINH LOAN	
ART UNIT	**PAPER NUMBER**
2826	

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10/624,540	ICHIHASHI ET AL.	
	Examiner	Art Unit	
	Minh-Loan T. Tran	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08/02/2005 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 8, 17-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Nagasaka et al. (6,300,683).

With regard to claim 17, figures 19D-21C of Nagasaka et al. disclose a method of fabricating a semiconductor device comprising the steps of forming an insulator film including a silicon oxide upper insulator film 15 and a BPSG lower insulation film 8 on a first conductive part 62; etching the insulator film thereby forming an opening 10

reaching the first conductive part 62; forming a second conductive part 12 (figure 19D) connected to the first conductive part 62 through the opening 10. It is inherent that the etching is conducted under substantially the same condition with respect to the upper insulator film 15 and the lower insulator film 8, because the silicon oxide upper insulator film 15 and the BPSG lower insulation film 8 are etched at the same time. Note lines 51-67 in column 15 and lines 1-13 in column 16 of Nagasaka et al.

With regard to claims 18,19, lines 51-67 in column 15 of Nagasaka et al. disclose the etching is conducted under a condition where a C-F based polymer (CF_4) is formed when the first conductive part 62 is exposed to the etching.

With regard to claim 8, the lower BPSG insulator film 8 has a higher etching selection ratio than the upper SiO_2 insulator film 15.

Claims 8-11, 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Segawa et al. (6,281,562).

With regard to claim 17, figures 8(a)-8(c) of Segawa et al. disclose a method of fabricating a semiconductor device comprising the steps of forming an insulator film including a silicon oxide upper insulator film 11 and a silicon nitride lower insulation film 10b on a first conductive part 8; etching the insulator film thereby forming an opening 20 reaching the first conductive part 8; forming a second conductive part 22 connected to the first conductive part 8 through the opening 20. It is inherent that the etching is conducted under substantially the same condition with respect to the upper insulator film 11 and the lower insulator film 10b, because the silicon oxide upper insulator film 11

and the silicon nitride lower insulation film 10b are etched at the same time. Note lines 42-65 in column 19 of Segawa et al.

With regard to claim 8, the silicon nitride lower insulator film 10b has a higher etching selection ratio than the SiO_2 upper insulator film 11. Note figures 8a-8c and lines 38-48 in column 20 of Segawa et al.

With regard to claim 9, figure 12 of Segawa et al. disclose a first conductive part 8 contains silicide 9c having higher etching selection ratio than the silicon nitride lower insulator film 10b.

With regard to claims 10 and 11, figure 12 and lines 25-51 of Segawa et al. disclose a step of silicifying the first conductive part 8 in advance of the step of forming the insulator film (11, 10b); wherein the first conductive part includes gate electrode 4a, the source and drain regions 8.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Segawa et al. (6,281,562).

With regard to claims 12, 13 and 15, figures 8a-8c and 12 of Segawa et al. do not disclose the opening 20 is etched using dry etching through a high concentration

plasma device and with etching gas having a composition of $C_xH_yF_z$. However, it would have been obvious to one of ordinary skill in the art to form the opening of Segawa et al.'s device by dry etching through a high concentration plasma device and with etching gas having a composition of $C_xH_yF_z$ because such etching gas is conventional in the art for etching the insulation film for forming the contact plug of the field effect transistor. Note figure 7 of APPA is cited to support for the well known position.

With regard to claim 14, figure 8a of Segawa et al. show the silicon nitride lower insulator film 10b is in contact with the surface of the first conductive part 8 through the insulator film 10a.

With regard to claim 16, Segawa et al. does not disclose the lower insulator includes an SOG film. Although Segawa et al. does not teach exact the material of the lower insulator film as that claimed by applicant, the material differences are considered obvious design choices and are not patentable unless unobvious or unexpected results are obtained from these changes. It appears that these changes produce no functional differences and therefore would have been obvious. Note *In re* Leshin, 125 USPQ 416, *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Circ. 1990).

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh-Loan T. Tran whose telephone number is (571) 272-1922. The examiner can normally be reached on Monday-Friday 9:00 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J. Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mlt
09/2005

Minh-Loan T. Tran
Primary Examiner
Art Unit 2826